

**Santa Anita Stormwater Flood Management  
and Seismic Strengthening Project****Monitoring, Assessment, and  
Performance Measures****Introduction**

This Proposal for the Greater Los Angeles Region (Region) would substantially contribute to the objectives and planning targets in the adopted IRWM Plan. The Project is consistent with the Plan objectives and would contribute to the planning targets for sustaining infrastructure related to flood protection, water resources, and water quality and for water supply by the recharge of stormwater. To assess how this Project would contribute to the Plan objectives and planning targets, performance measures have been identified. Specific performance and monitoring measures were based on how the performance measures apply to the identified Project benefits, which methods and locations will be used to collect and analyze data, and how the monitoring data will be used to measure progress in meeting the objectives of the IRWM Plan.

Project Performance: The following performance measures will be used to quantify and verify the Project performance:

- **Flood Risk Reduction** – Routine measurements (daily, weekly, and monthly) using dam safety monitoring equipment at both the Dam and Debris Basin will ensure that the Dam and the Debris Basin are performing satisfactorily. Automated dam safety instrumentation data at the Dam will be viewable remotely, enabling rapid assessment of Dam performance after an earthquake. This assessment will enable dam safety engineers to respond quickly to a potential emergency and to mitigate potential flood damage. DSOD annual inspections for continued safe operation will be used to ensure compliance as well.

Construction of the new seismic remediation outlet tower and spillway modification at Santa Anita Dam will reduce flooding potential from dam failure due to seismic and structural deficiencies at the Dam. Seismically strengthening the Debris Basin will also include flood reduction benefits. Monitoring of the facilities for dam safety compliance will offset flood risks downstream by ensuring the Dam and Debris Basin are performing acceptably.

The District monitors/documents the Dam's condition and all dam safety monitoring equipment daily/weekly/monthly depending on the reservoir elevation of the facility. In addition, releases from the Dam are monitored as standard flood control operating procedures. The District also monitors the downstream wash routinely for flooding during storm events and routine releases.

**Santa Anita Stormwater Flood Management  
and Seismic Strengthening Project****Monitoring, Assessment, and  
Performance Measures**

- **Water Supply** – Additional groundwater recharge of 518 AFY will result in an increased quantity and quality of local potable supply that would otherwise be wasted to the ocean.

Release rates and volumes of water released from Santa Anita Dam and diverted at the Headworks or captured and stored at the Debris Basin for release to the Santa Anita Spreading Grounds are regularly monitored and documented by the District. These data are used to calculate the volume of water conserved / recharged annually (AFY) to offset imported water use and avoided project costs.

Following Project completion, the District will measure the total amount of stormwater runoff captured at the Dam and Debris Basin, the amount of stormwater recharged into the Raymond Basin by the spreading grounds, and the amount of runoff discharged downstream into the channel, which is not conserved in the Raymond Basin. These measurements will be reported per storm event and summarized annually. The measurements will be evaluated to assess performance of the Project by comparing the information with before Project measurements. Based on the performance, an adaptive management approach will be implemented to adjust operations and control systems to optimize their efficiency to ensure the highest benefit from the Project.

The monitoring data from both performance measures will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- Implementation of this Project will reduce flood risks for the downstream communities from a rapid failure of Santa Anita Dam due to seismic and structural deficiencies of the facility. In addition, the Project will reduce flood risks from seismic deficiencies of the Debris Basin's embankment, spillway, and intake structure.
- Implementation of this Project will reduce the IRWM region's reliance on imported water by the measured amount of additional storm water captured (518 AFY on average) for local groundwater basin recharge.
- Increased stormwater capture as a result of Project will result in avoided project costs for a new feeder pipeline for the East Raymond Basin
- Conjunctive management of infrastructure and water resources will meet multiple IRWM objectives: Reduce flood risk, increase Federal/regional/local water use

**Santa Anita Stormwater Flood Management  
and Seismic Strengthening Project**
**Monitoring, Assessment, and  
Performance Measures**

efficiency, maintain lower-cost water supply, and develop sustainable groundwater resources.

The Project's performance measures, including all goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.1.

Project Goals	<ul style="list-style-type: none"> <li>• to reduce flood damage potential to the downstream communities</li> <li>• to increase recharge and quality of the local groundwater basin</li> <li>• to improve public safety by remediating seismic safety issues at the Dam and the Debris Basin</li> </ul>
Desired Outcomes	<p><u>Short-term:</u> Construct outlet tower and modify spillway to reduce flood damage risk to downstream communities; modify Debris Basin to address seismic issues and deficiencies; rehabilitate Headworks and enlarge and enhance Spreading Grounds.</p> <p><u>Long-term:</u> <b>Flood Damage Reduction:</b> Ensure continued safe operation of the Dam and Debris Basin and received positive inspection reports by DSOD for the continued use and operation. <b>Water Supply and Quality:</b> Once Project is complete and all components are operational, recharge an additional 518 AFY of stormwater runoff to avoid imported water project and costs and increase water quality.</p>
Output Indicators	<p><u>Short-term:</u> Completion, testing, and acceptance of construction work. Obtain certificates from DSOD for impounding water at Dam and Debris Basin.</p> <p><u>Long-term:</u> <b>Flood Damage Reduction:</b> Monitor Dam and Debris Basin as required for dam safety compliance and reporting. <b>Water Supply and Quality:</b> Recharge</p>

**Santa Anita Stormwater Flood Management  
and Seismic Strengthening Project**
**Monitoring, Assessment, and  
Performance Measures**

	additional 518 AFY of stormwater runoff to the East Raymond Basin.
Outcome Indicators	<p><u>Short-term:</u> Completion and acceptance of construction work.</p> <p><u>Long-term:</u>  <b>Flood Damage Reduction:</b> Normal monitoring readings of Dam and Debris Basin.  <b>Water Supply and Quality:</b> Amount of additional water recharged to offset imported water use calculated as AFY of stormwater recharged into East Raymond Groundwater Basin.</p>
Measurement Tools and Methods	<p><u>Short-term:</u> Periodic progress / status reports</p> <p><u>Long-term:</u>  <b>Flood Damage Reduction:</b> Dam Safety Monitoring reporting to the State and continued DSOD inspection for safety and compliance of structure.  <b>Water Supply and Quality:</b> Calculated spreading ground recharge volume.</p>
Targets	<p><u>Short-term:</u> Complete outlet tower and spillway modification for Dam safety and flood reduction potential. Complete Debris Basin retrofit, Headworks rehabilitation, and Spreading Grounds upgrade.</p> <p><u>Long-term:</u>  <b>Flood Damage Reduction:</b> Continuing compliance with Dam safety inspection for certification of Dam and Debris Basin.  <b>Water Supply and Quality:</b> 518 AFY of additional recharged water to East Raymond Basin.</p>